

The method of variable ...

23823
S/020/61/138/002/005/024
C111/C222

J. Douglas, H.H. Rachford, Trans.Am.Math.Soc., 82, 421 (1956), G. Birkhoff,
R. Varga, Trans.Am.Math.Soc., 92, 13 (1959), S.D. Conte, Pasif.J.Math.,
7, no. 4, 1535 (1957), J. Heller, J.Soc.Ind.Appl.Math., 8, 156 (1960).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova
(Moscow State University imeni M.V. Lomonosov)

PRESENTED: December 29, 1960, by S.L. Sobolev, Academician

SUBMITTED: December 29, 1960

X

Card 6/6

16.3900 16.3500 14.6500

S/020/61/118/003/005/017
011/2133

AUTHOR: Davydenov, Ye. G.

TITLE: An iteration method of solving simultaneous equations of finite differences

PERIODICALS: Akademiya nauk SSSR Doklady, vol. 138 no. 3, 1961, 522-525

TEXT: The author describes an iteration method for solving a system of difference equations which approximates the equations of elliptic type and of 2n-th order. The determination of the solution with exactness ϵ requires

$$O\left(\frac{\ln \frac{1}{\epsilon}}{h}\right) \ln \frac{1}{\epsilon}$$

arithmetic operations (h is step of the net).

In the square $D: 0 \leq x \leq 1, 0 \leq y \leq 1$ let the solution of the self-conjugate elliptic equation

$$L u = (-1)^m \sum_{|\alpha| \leq m} D_{\alpha} (a_{\alpha} D_{\alpha} u) + (-1)^n \sum_{|\beta| \leq n} D_{\beta} (b_{\beta} D_{\beta} u) = f \quad (1)$$

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An iteration method of solving
with the boundary conditions

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38/003/005/0:7
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$$\frac{\partial u}{\partial x} = \frac{\partial v}{\partial x} = 0 \quad (2)$$

be sought: u and v are two-dimensional differentiation vector; a_{ij} , b_{ij} are functions of x, y ; n is normal of the boundary S of D ; $a_{ij} \in C^{(m+1)}$, $b_{ij} \in C^{(m+1)}$; $a_{ij} = 0$ if $i > m$, $a_{ij} = 0$ if $j > m$; $a_{ij} = 0$ if $i > m$, $a_{ij} = 0$ if $j > m$.

Let D_1 be the set of the points

$$x_j = ih, y_j = jh, \text{ where } i = 0, \dots, N, j = 0, \dots, N, \quad (3)$$

The set of the points for which it holds $0 \leq i \leq m$ or $N - m + 1 \leq i \leq N$ or the same for j is denoted by S_1 . It holds

$$u_{ij} = 0, \text{ if } i \in S_1, \quad (4)$$

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An iteration method of solving . . .

For u_{ij} for which $i, j \in D_h \setminus S_h$ one obtains the following approximation of the problem:

$$L_h u = (-1)^m \sum_{|\alpha|=m} D_{\alpha}^h (a_{\alpha} D_{\alpha}^h u) + (-1)^{|\beta|} \sum_{|\beta| \leq m} D_{\beta}^h (b_{\beta} D_{\beta}^h u) = f \quad (5)$$

where D_{α}^h denotes the "right" differences with respect to α , D_{α}^h the "left" differences, u -- $(N+1)^2$ - dimensional vector which satisfies (4). The convergence of (5) to the solution of (1) - (2) is proved in the paper of V. K. Saul'yev (Ref. 7: Vychislitel'naya matematika, Nr. 1 (1957)).

Theorem 1: The difference approximation (4) - (5) preserve the properties of self-adjointness and of the positivity of the differential operators.

$$\text{Let } M_h u = (-1)^m (D_{(m,0)}^n D_{(m,0)}^h + D_{(0,m)}^h D_{(0,m)}^n) u$$

Theorem 2: If ψ satisfies (4) and if $(M_h \psi, \psi) = 1$, then there exist

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constants m_0 and M_0 which do not depend on h , such that

$$0 < m_0 \leq (L_h \psi, \psi) \leq M_0 \quad (6)$$

(φ, ψ) denotes $\sum_{i=0}^N \sum_{j=0}^N \varphi_{ij} \psi_{ij} h^2$.

In order to solve (4) - (5) the author proposes the following method. The approximation $v^{(n)}$ is assumed to be known. Let the next approximation then be determined from

$$M_h u^{(n+1)} = M_h v^{(n)} - \tau(L_h v^{(n)} - f) \quad (12)$$

where τ is the iteration parameter.

Theorem 3: The iteration process (12), for which for every step the $v^{(n)}$ is taken as initial approximation for $u^{(n+1)}$ and the error is

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ξ_1 - times shortened according to the method of alternating directions, requires $\sim h^{-2} \ln^2 h \ln \xi$ arithmetic operations for determining the solution of (4) - (5) with exactness ξ . The theorem is based on the paper of the author (Ref. 10: DAN, 138, Nr. 2 (1961)).

N. S. Bakhvalov is mentioned in the paper.

There are 6 Soviet-bloc and 4 non-Soviet-bloc references. The three references to English-language publications read as follows: D. W. Peaceman, H.H. Rachford, J.Soc. Ind. Appl. Math., 3, 28 (1955); J. Douglas, H. H. Rachford, Trans. Am. Math. Soc., 82, 421 (1956); G. Birkhoff, R. Varga, Trans. Am. Math. Soc., 92, 13 (1959).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M. V. Lomonosova (Moscow State University imeni M.V.Lomonosov)

PRESENTED: December 29, 1960, by S. L. Sobolev, Academician

SUBMITTED: December 27, 1960

Card 5/5

VOLODARSKIY, R.F.; ARONOV, V.I.; D'YAKONOV, Ye.G.; SHIRIKOV, V.P.;
FEDYNSKIY, V.V., doktor fiz.-mat. nauk, prof., red.;
ZARETSKAYA, A.I., ved. red.; BASIMAKOV, G.M., tekhn. red.

[Use of electronic calculating machines to interpret gravity
and magnetic fields]Primenenie elektronno-schetnykh mashin dlia
interpretatsii gravitatsionnykh i magnitnykh polei. Pod red.
V.V.Fedynskogo. Moskva, Gostoptekhzdat, 1962. 74 p.
(MIRA 15:9)

(Electronic calculating machines) (Gravity)
(Magnetic anomalies)

26.5100

35531

S/020/62/142/006/002/019
B112/B106

AUTHOR: D'yakonov, Ye. G.

TITLE: Method of nets for the solution of parabolic 2m-th-order equations with separable variables

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 6, 1962, 1236-1238

TEXT: The author describes a very economical difference scheme for solving the heat conduction equation in a domain $Q_T = \bar{\Omega} \times [0, T]$, where $\bar{\Omega}$ is a parallelepiped. The equation

$$\partial u(x, t) / \partial t = \sum_{s=1}^p L_s u(x, t) + f(x, t)$$

with

$$L_s u = \sum_{\alpha=0}^m (-1)^{\alpha-1} \partial^{\alpha} (a_{s\alpha}(x_s) \partial^{\alpha} u / \partial x_s^{\alpha}) / \partial x_s^{\alpha}$$

is replaced by the system of difference equations

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Method of nets for ...

$$\frac{v_{\Delta}^{(n+1/p)} - v_{\Delta}^{(n)}}{\tau} = L_1^h v_{\Delta}^{(n+1/p)} + \sum_{s=2}^p L_s^h v_{\Delta}^{(n)} + f_{\Delta}^{(n)},$$

$$\frac{v_{\Delta}^{(n+s/p)} - v_{\Delta}^{(n+(s-1)/p)}}{\tau} = L_s^h v_{\Delta}^{(n+s/p)} - L_s^h v_{\Delta}^{(n)},$$

$$s = 2, 3, \dots, p,$$

(4), where

$$L_s^h v_{\Delta} = \sum_{\alpha=0}^m (-1)^{\alpha-1} \Delta_{x_s}^{\alpha} (a_{sx}(i_s, h) \Delta_{x_s}^{\alpha} v_{\Delta}),$$

$$\Delta_{x_s} v_{\Delta} = \frac{v_{i_1 \dots (i_s+1) \dots i_p} - v_{i_1 \dots i_p}}{h}, \quad \Delta_{x_s}^- v_{\Delta} = \frac{v_{i_1 \dots i_p} - v_{i_1 \dots (i_s-1) \dots i_p}}{h}, \quad (5).$$

$$v_{\Delta}^{(n+s/p)} = 0 \quad \text{при } \Delta \in S_h.$$

There are 11 references: 8 Soviet and 3 non-Soviet references. The three references to English-language publications read as follows: D. W. Peaceman, H. H. Rachford, J. Soc. Ind. Appl. Math., 3, No. 1, 28 (1955); J. Douglas, H. H. Rachford, Trans. Am. Math. Soc., 82, 421 (1956); G. A. Baker, T. A. Oliphant, Quart. Appl. Math., 17, No. 4 (1960).

Card 2/3

Method of nets for ...

S/020/62/142/006/002/019
B112/B108

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

PRESENTED: October 27, 1961, by S. L. Sobolev, Academician

SUBMITTED: October 7, 1961

Card 3/3

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S/020/62/143/001/003/030
B112/B102

16.3500 10.1200 9.3700

AUTHOR: D'yakonov, Ye. G.

TITLE: A method for solving the Poisson equation

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 1, 1962, 21 - 24

TEXT: The author solves the problem

$$\Delta_{x\bar{x}}^2 u_{ij} + \Delta_{y\bar{y}}^2 u_{ij} = f_{ij}$$

for $(i,j) \in S_h$, $u_{ij} = 0$ for $(i,j) \in S_h$, where

$$\Delta_{x\bar{x}}^2 u_{ij} = (u_{i+1,j} - 2u_{ij} + u_{i-1,j})/h^2,$$

$$\Delta_{y\bar{y}}^2 u_{ij} = (u_{i,j+1} - 2u_{ij} + u_{i,j-1})/h^2,$$

by the following iteration process:

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A method for solving the Poisson equation

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$$(E - \tau_n \Delta_{xx}^2) u_{ij}^{(n+1/2)} = (E + \tau_n \Delta_{xx}^2) u_{ij}^{(n)}; \quad (5)$$

$$(E - \tau_n \Delta_{yy}^2) u_{ij}^{(n+1)} = (E + \tau_n \Delta_{yy}^2) u_{ij}^{(n+1/2)} + \tau_n \tilde{f}_{ij}^{(n)}, \quad (5')$$

$$(i, j) \in \Omega_h,$$

where $\tilde{f}_{ij}^{(n)} = 0$ for $(i, j) \in S_h$, $\tilde{f}_{ij}^{(n)} = (E - \tau_n \Delta_{xx}^2)^{-1} f_{ij}$ for $(i, j) \in \Omega_h$. In order to obtain an approximation of the accuracy ε , a number of arithmetical operations is necessary, which is of the order of $\ln h \ln \varepsilon / h^2$. There are 4 references: 2 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: D. W. Peaceman, H. H. Rachford, J. Soc. Ind. and Appl. Math., 3, No. 1 (1955); J. Douglas, H. H. Rachford, Trans. Am. Math. Soc., 82, No. 2 (1956).

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

PRESENTED: October 27, 1961, by S. L. Sobolev, Academician

SUBMITTED: October 7, 1961

Card 2/2

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S/020/62/144/001/003/024
B112/B102

AUTHOR:

D'yakonov, Ye. G.

TITLE:

Difference schemes with a disintegrating operator for unsteady equations

PERIODICAL:

Akademiya nauk SSSR. Doklady, v. 144, no. 1, 1962, 29-32

TEXT: In the space $(x_1, x_2, \dots, x_p, t)$, implicit difference schemes of the form $Av^{(n+1)} = F(f^{(n)}, v^{(n)}, v^{(n-1)}, \dots, v^{(n-r)})$ are considered, where the p -dimensional operator A disintegrates into p operators A_s with dimension numbers lower than p . By means of such difference schemes, the following three boundary value problems are investigated:

$$1. \quad D_0 u = \sum_{s=1}^p [D_s(a_s(x, t) D_s u) + b_s(x, t) D_s u] + d(x, t) u + f,$$

$$u|_{t=0} = \varphi(x), \quad u|_S = \psi(x, t);$$

$$2. \quad \sum_{s=1}^p [D_s(a_s(x_s, t) D_s u) + d_s(x_s, t) u] + f(x, t),$$

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$$u|_S = \psi(x, t), \quad u|_{t=0} = \varphi(x), \quad D_0 u|_{t=0} = \varphi_1(x);$$

$$3. \quad D_0 u = (-1)^{m-1} \sum_{|s|=2m} a_s D^s u + \sum_{|\alpha|=2m} a_\alpha D^\alpha u + \sum_{|\beta|<2m} a_\beta D^\beta u + f, \\ u|_{t=0} = \varphi(x).$$

D_0 and D_s denote $\partial/\partial t$ and $\partial/\partial x_s$, respectively. Estimates of the approximation rate are derived.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova
(Moscow State University imeni M. V. Lomonosov)

PRESENTED: December 12, 1961, by I. G. Petrovskiy, Academician

SUBMITTED: December 1, 1961

Card 2/2

D'YAKONOV, Ye.G. (Moskva)

Some difference systems for solving boundary value problems. Zhur.
vych. mat. i mat. fiz. 2 no.1:57-79 Ja-F '62. (MIRA 15:3)
(Differential equations--Numerical solutions)
(Boundary value problems)

D'YAKONOV, Ye.G.

Method of nets for solving parabolic equations of order $2m$
with separable variables. Dokl. AN SSSR 142 no.6:1236-1238
F '62. (MIRA 15:2)

1. Moskovskiy gosudarstvennyy universitet im. M.G.Lomonosova.
Predstavleno akademikom S.L.Sobolevym.
(Differential equations, Partial)

D'YAKONOV, Ye.G. (Moskva)

Difference schemes with splitting operators for multidimensional
stationary problems. Zhur.vych.mat.i mat.fiz. 2 no.4:549-568
Jl-Ag '62. (MIRA 15:8)
(Difference equations) (Operators (Mathematics))

L 12736-63

BDS/EWT(d)/FCC(w) AFFTC IJP(C)

S/208/63/003/002/013/014

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AUTHOR: D'yakonov, Ye. G. (Moscow)

TITLE: The application of split-up operators

PERIODICAL: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 3, no. 2, 1963, 385-388

TEXT: The author introduced earlier (Ref. 1: Dokl. AN SSSR, 1961, 144, no. 1, 29-32; Ref. 2: Zh. vychisl. matem. i matem. fiz., 1962, 2, no. 4, 549-568) the concept of the difference split-up operator and proposed for the rectangular case a data-collecting algorithm based on the splitting-up of the operator. This algorithm can be used for the solution of the system of finite difference equations

$$A v^{(n+1)} = F^{(n)}(v^{(n)}, v^{(n-1)}, \dots, v^{(n-q)}, f^{(n)}), \quad (1)$$

occurring in the case of nonstationary problems within the scheme of differences with split-up operators, as well as in the case of certain iteration method of solution for stationary difference problems. (The notation follows the second mentioned article). In the case of $p = 2$ one needs only $\propto 1/h^2$ arithmetic operation to find $v^{(n+1)}$. The present article shows that even in case of some nonorthogonal

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The application of split-up

regions one can modify the algorithm and solve the system (1) with the splitting-up operator A at the expense of $\sim 1/h^2$ arithmetic operations. For an arbitrary region $\bar{\Omega}$ one needs $\sim 1/h^3$ arithmetic operations. For the sake of simplicity the author discusses only the case $p = 2$ since nothing new is needed for the generalization of the results to a greater number of spacial variables. He gives the reading algorithm with a choice of follow-up points, the algorithm with parametric points and notes that they are valid even in the case of an uneven network. The author thanks V. I. Lebedev for valuable remarks. There are 4 figures.

SUBMITTED: November 9, 1962

Card 2/2

D'YAKONOV, Ye.G.

Use of difference schemes with splitting operators for hyperbolic equations with variable coefficients. Dokl. AN SSSR 151 no.4: 762-765 Ag '63. (MIRA 16:8)

1. Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova.
Predstavleno akademikom S.L.Sobolevym.
(Differential equations)

ACCESSION NR: APL024561

S/0208/64/004/002/0278/0291

AUTHOR: D'yakonov, Ye. G. (Moscow)

TITLE: Difference scheme with a splitting operator for general parabolic equations of the second kind with variable coefficients

SOURCE: Zhurnal vysshelitel'noy matematiki i matematicheskoy fiziki, v. 4, no. 2, 1964, 278-291

TOPIC TAGS: difference equation, finite difference, parabolic equation, splitting operator

ABSTRACT: The problem considered is the solution of the equation

$$D_t u = \sum_{l=1}^p D_l (\tilde{a}_l(x) D_l u) + \sum_{s=1}^p (\tilde{b}_s(x) D_s u + \tilde{c}_s(x) u) + f(x),$$

with initial and boundary conditions

$$u|_{x=0} = \varphi(x') \text{ and } u|_S = \psi(x), \quad x \in S,$$

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ACCESSION NR: APL024561

on the cylinder

$$Q_T = \bar{\Omega} \times [0 < x_0 < T]$$

Here $\bar{\Omega}$ is a closed bounded region of a finite number of p-dimensional parallelepipeds with boundaries parallel to the coordinate planes. The remaining notation depends on that of Ye. G. D'yakonov (Raznostnyye skhemy s rasshcheplyayushchimsya operatorom dlya mnogomernykh nestatsionarnykh zadach, Zh. vychisl. matem. i matem. Fiz., 1962, 2 No. 4, 549-568),

$$x = (x_0, x'),$$

$$\tilde{a}_s = \tilde{a}_{ss}(x) > \gamma_1 = \text{const}_s > 0; \quad \tilde{a}_{ss} = \tilde{a}_{ss};$$

$$\left| \sum_{i=1}^p a_{si} \xi_i \right| < (1 - \sigma_1) \sum_{i=1}^p \tilde{a}_{si} \xi_i,$$

where $\sigma_1 > 0$, $\xi_s (s = 1, 2, \dots, p)$ — is an arbitrary real number

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ACCESSION NR: AP4024561

Because of the last condition, the equation is parabolic. In the case of $p = 2$, this condition coincides with the usual parabolic condition. The problem is solved approximately by using a method of grids. A difference problem consisting of a system of finite difference equations is obtained for the given problem. Convergence of the method is shown and estimates of the rates of convergence are derived. Orig. art. has: 69 equations.

ASSOCIATION: none

SUBMITTED: 22Jan62

DATE ACQ: 16Apr64

ENCL: 00

SUB CODE: MM

NO RET SOV: 011

OTHER: 001

Card 3/3

D'YAKONOV, Ya.G. (Moskva)

Difference schemes of second-order exactness with splitting
operators for parabolic equations without mixed derivatives.
Zhur. vych. mat. i mat. fiz. 4 no.5:935-941 S.O '64.
(MIRA 17:12)

2 45797-65 EWT(d) IJP(c)

ACCESSION NR: AP5008400

S/0199/65/006/001/0108/0113

AUTHOR: Lebedev, V. I.; D'yakonov, Ye. G.

TITLE: On the application of difference circuits with a decomposed operator for the solution of the third boundary value problem in the case of equations of the parabolic type

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 6, no. 1, 1965, 108-113

TOPIC TAGS: partial differential equation, parabolic equation, approximation method, boundary value problem

ABSTRACT: The applicability of decomposed difference operators to the third boundary value problem is demonstrated for the case of a parabolic differential equation having constant coefficients. A solution is sought for the equation

$$D_0 u = \sum_{i=1}^n \{a_i D_i^2 u + c_i u\} + f(x) \quad \left(D_i = \frac{\partial}{\partial x_i}\right),$$

in a prism $Q_T = \bar{\Omega} \times [0 \leq x_n \leq T]$, where $\bar{\Omega} = \{x = (x_1, x_2) : 0 \leq x_s \leq 1; s = 1, 2\}$, and

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ACCESSION NR: AP5008400

satisfying the initial condition $u|_{x_1=0} = \varphi(x)$ and conditions on the boundary Γ of the domain Ω :

$$D_s u + b_s u = \psi_s(x), \quad s = 1, 2,$$

where $x \in \Gamma$, $a_s > 0$, b_s are functions constant along the boundary $x_s = 0, 1$;

$$b_s|_{x_s=0} < 0, b_s|_{x_s=1} > 0.$$

The network solution is estimated in the metric of a positive definite quadratic form and is given in terms of the right member of an equation in divergent form. The algorithms proposed may be used in iterative methods of solution for the difference analog of the steady-state problem. It is extended to domains made up of rectangles with their sides parallel to the coordinate axes. Orig. art. has: 23 formulas.

ASSOCIATION: none

SUBMITTED: 06Apr64

ENCL: 00

SUB CODE: MA, DP

NO REF SOV: 011

OTHER: 000

Card 2/2 *me*

LEBEDEV, V.I.; D'YAKONOV, Ye.G.

Use of difference schemes with splitting operators in solving the
third boundary value problem in the case of parabolic equations.
Sib. mat. zhur. 6 no.1:108-113 Ja-F '65.

(MIRA 18:4)

L 53035-65 ENT(d) IJP(c)

ACCESSION NR: AT5010205

UR/3043/65/000/003/0163/0190

AUTHOR: D'yakonov, Ye. G.

TITLE: Difference schemes of second-order accuracy with splitting operator for multidimensional parabolic equations with variable coefficients

SOURCE: Moscow. Universitet. Vychislitel'nyy tsentr. Sbornik rabot, no. 3, 1965. Vychislitel'nyye metody i programmirovaniye (Computing methods and programming), 163-190

TOPIC TAGS: partial differential equation, parabolic equation, second order equation, difference method, approximate calculation

ABSTRACT: This is a continuation of earlier studies by the author (DAN SSSR v. 144, no. 1, 1962 and others) in which he introduced difference computation schemes with splitting operator for multidimensional nonstationary problems. The present article is devoted to three-layer difference methods for the mixed problem for an equation of the parabolic type

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$$D_0 u = \sum_{i=1}^p D_i (a_{i1}(x) D_1 u) + f(x, u, D_1 u, D_2 u, \dots, D_p u).$$

$$D_s = \frac{\partial}{\partial x_s} \quad (s = 0, 1, \dots, p), \quad x = (x_0, x_1, \dots, x_p),$$

$$\left| \sum_{i \neq l} a_{il} \xi_i \xi_l \right| \leq (1 - \sigma) \sum_{i=1}^p a_{ii} \xi_i^2, \quad (0 < \sigma < 1),$$

with an aim at obtaining an economical difference scheme. Such a scheme, although not optimal in the sense of using a minimum number of arithmetic operations, makes less demands on the capacity of the computer memory and on the amount of equipment in the computer. The work done by others in field is reviewed in some detail. By rigorously and thoroughly analyzing the initial problem and the various investigated difference schemes, and by analyzing the stability, convergence, and degree of accuracy of the results, the author obtains an economic difference method which converges to a higher degree of accuracy than the previous methods and which calls

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ACCESSION NR: AT5010205

for a smaller number of arithmetic operations. Orig. art. has: 49 formulas.

ASSOCIATION: Vychislitel'nyy tsentr Moskovskogo universiteta (Computation Center,
Moscow University)

SUBMITTED: 00

ENCL: 00

SUB CODE: MA

NR REP SOV: 024

OTHER: 009

Card 3/3

L 53033-65 EWT(d)

Pg-4 IUP(e)

ACCESSION NR: AT 10206

UR/3043/65/000/003/0191/0222

AUTHOR: D'yakonov, Ye. G.

TITLE: Concerning some iterative methods of solving systems of difference equations arising in the solution of elliptic partial differential equations by the grid method

SOURCE: Moscow. Universitet. Vychislitel'nyy tsentr. Sbornik rabot, no. 3, 1965. Vychislitel'nyye metody i programmirovaniye (Computing methods and programming), 191-222

TOPIC TAGS: partial differential equation, elliptic equation, iterative method, difference equation

ABSTRACT: This is a companion to the preceding paper in the same source (Accession Nr. AT5010205) and is also a continuation of earlier work by the author (DAN SSSR v. 138, no. 2, 1961 and others), dealing with alternating-direction iterative methods of solving the difference analogs of the Dirichlet problem for the Poisson equation and the first boundary value problem for the case of self-conjugate elliptic equations of order $2m$ with variable coefficients. The present article is devoted

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to the construction and investigation of rapidly converging iterative methods for such problems. The iterative methods of this article are based on the fact that the difference operator acting on the sought iteration is of the splitting type, as defined by the author elsewhere (DAN SSSR v. 144, no. 1, 1962). Algorithms based on the splitting of the operator make it possible to reduce the number of auxiliary quantities that must be stored in a computer memory. The author solves the difference analog of the first boundary problem in a rectangle for the equation

$$\begin{aligned} D_1^2(a_1(x_1) D_1^2 u) + 2D_1 D_2(a_{12}(x_1, x_2) D_1 D_2 u) + D_2^2(a_2'(x_2) D_2^2 u) + \\ + D_1(b_1(x_1) D_1 u) + D_2(b_2(x_2) D_2 u) + c_1(x_1) u + \\ + c_2(x_2) u = f(x_1, x_2) \end{aligned} \quad (1)$$

$$(D_i = \frac{\partial}{\partial x_i})$$

with the aid of the iteration process based on the splitting of the operator. It is proved that the proposed method converges and the rate of convergence is estimated for the case when the variables of Eq. (1) separate. This is followed by development of an iteration method for the solution of the system of difference

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L 53033-65

ACCESSION NR: AT5010206

equations arising when the grid method is used for a numerical solution of the first boundary problem in a parallelepiped in the case of a self-conjugate elliptic equation with variable coefficients of order $2m$. The number of operations necessary to determine the solution of the system with a specified degree of accuracy is estimated. Orig. art. has: 103 formulas.

ASSOCIATION: Vychislitel'nyy tsentr Moskovskogo universiteta (Computation Center, Moscow University)

SUBMITTED: 00

ENCL: 00

SUB CODE: MA

NR REF SOV: 013

OTHER: 013

678
Card 3/3

L 59515-65 EWT(d) IJP(c)

ACCESSION NR: AP5017599

UR/0199/65/006/003/0509/0515
517.946

16
B

AUTHOR: D'yakonov, Ye. G.

TITLE: Use of difference schemes with decomposed operator for certain systems of parabolic and hyperbolic equations 16

SOURCE: Sibirskiy matematicheskiy zhurnal, v. 6, no. 3, 1965, 509-515

TOPIC TAGS: differential equation, approximation calculation, difference equation

ABSTRACT: The author seeks the solution via difference approximation of the system

$$D_0 u = \sum_{i=1}^p D_i (A^i D_i u) + \sum_{i=1}^p B^i D_i u + Cu + f, \quad (1)$$

subject to

$$u|_{x_0=0} = \varphi(x'), u|_{\Gamma} = \psi(x), x \in \Gamma \quad (2)$$

in the cylinder $Q_T = \bar{\Omega} \times (0 \leq x_0 \leq T)$, where $\bar{\Omega}$ is a closed region in p dimensional space composed of a finite number of p-dimensional parallelepipeds parallel to the coordinate planes. He uses a scheme he has previously developed, giving a more precise a priori estimate of the error. Orig. art. has: 20 formulas.

Card 1/2

L 59515-65

ACCESSION NR: AP5017599

ASSOCIATION: none

SUBMITTED: 10Feb64

NO REF SOV: 009

ENCL: 00

OTHER: 001

SUB CODE: MA

dm
Card 2/2

L 2136-66 ENT(d) IJP(c)
ACCESSION NR: AP5021879

UR/0020/65/163/006/1314/1317

AUTHOR: D'yakonov, Ye. G.

TITLE: Use of operators equivalent in spectrum for solving difference analogs of strongly elliptic systems

SOURCE: AN SSSR. Doklady, v. 163, no. 6, 1965, 1314-1317

TOPIC TAGS: differential equation, integral equation

ABSTRACT: After a brief abstract discussion of the notion of operators which are equivalent in spectrum and of the use of this concept for devising algorithms for inversion of operators, the author considers the system

$$\sum_{l=1}^N \sum_{|\alpha| \leq m_l} (-1)^{|\alpha|} D^\alpha (a_{rl}^{\alpha\beta}(x) D^\beta z_l) = f_r(x), \quad r = 1, 2, \dots, N, \quad (1)$$

satisfying

$$D^\alpha z_l|_r = 0, \quad |\alpha| \leq m_l - 1, \quad l = 1, 2, \dots, N, \quad (2)$$

where $z(x) = (z_1, \dots, z_N)$ is the desired solution

$$a_{rl}^{\alpha\beta} = 0, \quad \text{if } |\beta| > m_{r,l} \quad (3)$$

Card 1/2

L 2136-66
ACCESSION NR: AP5021879

$$\sum_{l=1}^N \sum_{\substack{|\alpha|=m_l \\ |\beta|=n_l}} a_{r,l}^{\alpha\beta} \xi_l^{(\alpha)} \xi_l^{(\beta)} > \delta \sum_{l=1}^N \sum_{|\alpha|=m_l} (\xi_l^{(\alpha)})^2, \quad \delta > 0; \quad (4)$$

for any real N dimensional vectors $\xi^{(\alpha)} = (\xi_1^{(\alpha)}, \xi_2^{(\alpha)}, \dots, \xi_N^{(\alpha)})$. The author introduces a natural generalization of the method of variable controls. He discusses the number of arithmetic operations needed to obtain given accuracy and finally treats applications to other boundary conditions. The results can be generalized to certain systems of integro-differential equations and to certain nonlinear strongly elliptic problems. Orig. art. has: 26 formulas.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University)

SUBMITTED: 26Nov64

ENCL: 00

SUB CODE: MA

NO REF SOV: 007

OTHER: 004

Card 2/2

L 07173-67 EWT(d) IJP(c)

ACC NR: AP6032171

SOURCE CODE: UR/0055/66/000/005/0003/0011

AUTHOR: D'yakonov, Ye. G.

2/
13

ORG: Chair of Computer Mathematics, Moscow State University (Moskovskiy gosudarstvennyy universitet, Kafedra vychislitel'noy matematiki)

TITLE: On the use of difference schemes with a decomposed operator for several systems of integral-differential equations

SOURCE: Moscow. Universitet. Vestnik. Seriya I. Matematika, mekhanika, no. 5, 1966, 3-11

TOPIC TAGS: integral equation, difference equation, parabolic equation, hyperbolic equation, boundary value problem, approximation method

ABSTRACT: Difference methods using a decomposed operator are applied to the solution of integral-differential equations in p space variables. The system studied is

$$D_0 u - Lu = f(x, Du, Su), \quad (1)$$

satisfying initial and boundary conditions

$$u|_{x_0=0} = \varphi(x'), \quad u|_{\Gamma_T} = \psi(x), \quad x \in \Gamma_T, \quad (2)$$

where

$$x = (x_0, x'), \quad D_s = \frac{\partial}{\partial x_s}, \quad s = 0, 1, \dots, p,$$

Card 1/2

UDC: 517.948.34

L 07173-67

ACC NR: AP6032171

$$Lu = \sum_{i,j=1}^p D_i(a_{ij}(x) D_j \mu),$$

The difference scheme is constructed and theorems are proved to demonstrate its absolute stability. Error estimates are given and an algorithm is presented. Orig. art. has: 46 formulas.

SUB CODE: 12/ SUBM DATE: 12Nov64/ ORIG REF: 005/ OTH REF: 000

Card 2/2 *MLE*

D'yakonov, Yu.

AUTHOR: Vyatkin, O. and D'yakonov, Yu.

107-9-5/53

TITLE: Contributions of Radio-Amateurs (Vklad radiolyubiteley)

PERIODICAL: Radio, 1957, # 9, p 5-6 (USSR)

ABSTRACT: The Tomsk TV-center was established by radio-amateurs with the help of workers of the Tomsk Polytechnic Institute, especially by the chief of the TV laboratory V.S. Melikhov, candidate of technical sciences, and several laboratory assistants.

The TV station has four channels: two channels serve for studio broadcasts and the two others for broadcasting movies. The equipment was manufactured at the TV laboratory of the Polytechnic Institute. The two transmitting cameras contain "ЛН-1" iconoscopes.

The first transmissions of the Tomsk TV center began in May 1955. Since the available floor space of the original studio was inadequate, a new studio had to be built. Regular TV broadcasts from this new studio began in March 1957. The effective range of the Tomsk TV-center is now 36 km.

However, a reliable reception can be obtained also at longer distances from the TV-center by utilizing accessory amplifier units and multiple directional antennas.

Card 1/2

The construction of a separate building for the TV-trans-

107-9-5/53

Contributions of Radio-Amateurs

mitters and a 100 m high TV antenna tower is planned. New 4-channel equipment, must be developed and manufactured by the Polytechnic Institute and will be installed by amateurs in the new TV-center. The complete set of this equipment will contain studio transmitting cameras with "ЛН-7" type tubes, designed by the engineer of the TV-laboratory of the Institute, Yu.I. Potekhin.

The Tomsk enterprises are manufacturing the equipment for the VHF radio-station. It will contain TV video transmitters of 5.0 kw and TV aural transmitters of 2.5 kw, as well as a radio FM transmitter.

There is one photo.

AVAILABLE: Library of Congress

Card 2/2

37133

S/179/62/000/001/001/027

E191/E435

10.1100
AUTHORS:

D'yakonov, Yu.N., Pirumov, U.G. (Moscow)

TITLE:

Certain supersonic types of gas flow in the presence of dissociation and ionization phenomena

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye. no.1, 1962, 7-14

TEXT: A method is presented for the analysis of flow around a wedge and a cone in a supersonic stream, taking into account the dissociation and ionization phenomena. Considering first the flow around the wedge, the pressure and enthalpy ratios upstream and downstream of a straight compression shock are recited resulting from the laws of conservation of mass, energy and momentum. Both ratios depend on the ratio of specific volumes. This ratio, in turn, depends on the approach Mach number and the nature of the gas. General relationships for this dependence are given graphically and the curves are used throughout the present analysis. In the flow around a wedge it is assumed that complete thermodynamic equilibrium prevails

Card (1/3)

S/179/62/000/001/001/027
E191/E435

Certain supersonic types ...

downstream of the shockwave. The viscosity is ignored. Using thermodynamic functions for air (0.001 to 1000 atm, 1000 to 20000°K) and the evaluation of the parameters of a straight shock carried out by a team of the Energeticheskii institut AN SSSR (Power Engineering Institute AS USSR), a table is computed giving for a wedge with a semi-angle of 40°, the angle of the oblique shock-wave and the pressure, temperature and density ratios for different approach Mach numbers in air at zero altitude and 80 km altitude. Turning to the flow around the cone, the analysis shows that very similar numerical relationships are valid in the two-dimensional and three-dimensional cases. Taking into account the real properties of air leads to a large increase in the limiting cone angle. At an approach Mach number of 5, the increase is 1° and at an approach Mach number of 20, it is 20°. Taking into account dissociation and ionization substantially reduces the pressure coefficient on the surface of the body under certain conditions. As the approach Mach number increases, the nature of the gas affects less and less the position of the compression shock. At a Mach number of 20, the

Card 2/3

Certain supersonic types ...

S/179/62/000/001/001/027
E191/E435

difference in limiting angles in the case of air and carbon dioxide does not exceed 2° . This applies to the cone and the wedge. Finally, the Prandtl-Meyer flow around an external blunt angle is considered on the assumption of a complete thermodynamic equilibrium of the gas. In addition, a "frozen" Prandtl-Meyer flow is considered. The degree of dissociation is assumed constant throughout the expansion and is equal to the degree of dissociation in the approaching flow. Solely the rotational and translational energy of the molecules and atoms varies, but the inert degrees of freedom preserve the value of the energy which they had in the approaching flow. It is shown that the parameters of the equilibrium and the frozen flow differ significantly, for example the lift values differ by about 10%. There are 7 figures and 3 tables.

SUBMITTED: August 8, 1961

Card 3/3

D'YAKONOV, Yu.N. (Moskva); ZAYTSEVA, N.A. (Noginsk)

Supersonic flow of an ideal gas about a blunt body. Izv. AN
SSSR. Otd. tekhn. nauk. Mekh. i mashinostr. no. 1:118-123 Ja-F '63.
(MIRA 16:2)

(Aerodynamics, Supersonic)

D'YAKONOV, Yu.N.; TELENIN, G.F.; TINYAKOV, G.P. (Moscow):

"Study of three-dimensional flow past bodies with detached shock wave."

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 64.

ACCESSION.NR: AP4043901

S/0179/64/000/004/0150/0153

AUTHOR: D'yakonov, Yu. N. (Moscow)

TITLE: Three-dimensional flow of a perfect supersonic gas around blunt bodies

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 4, 1964, 150-153

TOPIC TAGS: supersonic flow, three-dimensional supersonic flow, perfect gas, perfect gas flow, perfect supersonic gas, perfect supersonic gas flow, rocket propulsion

ABSTRACT: The recent paper by K. I. Babenko and G. P. Voskresenskiy evolved a numerical method for calculating three-dimensional flow of a supersonic gas around bodies. Using this method, Yu. N. D'yakonov and N. A. Zaytseva calculated the supersonic flow field at a sphere and near blunt cones with zero angles of attack and a wide range of Mach numbers and coning angles. This paper includes the results of computer calculations of supersonic flow around cones with spherical blunting, flying at angles of attack which were obtained by the net method. The gas parameter fields in the shock layer, pressure distribution at the surface of the blunt body and the shape of the shock wave are also included. A net and cylindrical coordinates are used for solving the problem. In the solution, the author sets the distance between the shock wave and the body at 1 along one coordinate, and the gas

Card 1/5

ACCESSION NR: AP4043901

parameters along different coordinates. The components of the velocity vector were taken at critical sonic velocity; the density was taken as the inflow density, and the pressure was taken as $\rho \cdot a^2$. Using the obtained data, curves were plotted for various angles of attack and coning angles. Figs. 1 and 2 in the Enclosure show the pressure distribution at the cone surface with a coning angle of $4^\circ 53'$, Mach number of 6 and angles of attack of 5° and 10° . Other curves in the paper illustrate the change in gas parameters along one of the coordinates. An entropy vortex is formed at the surface of blunt bodies caused by the varying gas intensity at supersonic velocities. On the basis of the theory of hypersonic currents (G. G. Cherny*y) it is known that for high Mach numbers the shock wave formed at blunt bodies has an inflection point. The data obtained correspond with theoretical results. The particles in the vortex have a lower kinetic energy than those outside the vortex and cannot resist the significant pressure gradient. This leads to the appearance of a shock wave at the stagnation region. The accuracy of the obtained results is 1 - 3%, of the same order as the initial data. The author met with difficulties, however, in finding the gas parameters of a thin vortex layer. "The author thanks K. I. Babenko and G. P. Voskresenskiy for the computer program used in their

Card 2/5

ACCESSION NR: AP4043901

paper when calculating the flow around sharp bodies flying at an angle of attack. The author also expresses his thanks to G. F. Telenin for his help in performing the work, as well as discussing its results." Orig. art. has: 9 figures and 1 table.

ASSOCIATION: none

SUBMITTED: 21Jan64

ENCL: 02

SUB CODE: ME

NO REF SOV: 003

OTHER: 000

Card 3/5

ACCESSION NR: AP4043901

ENCLOSURE: 01

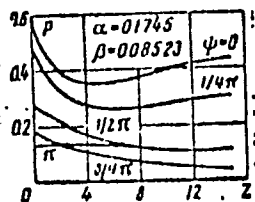


Figure 1.

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ACCESSION NR: AP4043901

ENCLOSURE: 02

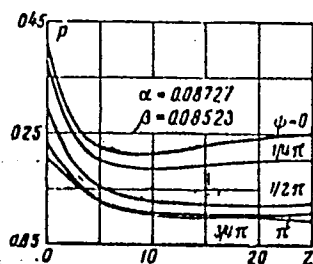


Figure 2.

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L 8403-65 EWT(1)/EPA(b)/FCS(k)/EWA(1) Pd-4 BSD/ASD(r)/AFTC(a)/ASD(p)-3/
AEDC(a)/AFWL/ASD(d)/AFETR/SSD RM
ACCESSION NR: AP4043540 S/0020/64/157/004/0822/0825

AUTHOR: D'yakonov, Yu. N.

TITLE: Three-dimensional flow over blunt-nosed bodies taking account
of equilibrium physicochemical reactions B

SOURCE: AN SSSR. Doklady*, v. 157, no. 4, 1964, 822-825

TOPIC TAGS: three dimensional flow, supersonic flow, thermodynamic
gas function, equilibrium flow, isentropic exponent, equilibrium
physicochemical reaction, shock wave

ABSTRACT: The problem of three-dimensional supersonic flow over
blunt-nosed bodies taking account of equilibrium physicochemical re-
actions is considered. A new analytical approximation of equilibrium
thermodynamic gas functions makes it possible to solve the problem
by the method of nets. It is assumed that the dependence of new
thermodynamic function κ (the effective isentropic exponent) on
pressure is a known function. Calculations were made on a computer
for a wide range of temperature and velocity up to $M = 20$. The re-
sults are given in graphs and show that at equilibrium flow the point
of inflection on a shock wave moves toward the nose, and the width of
Card 1/2

L 8403-65

ACCESSION NR: AP4043540

the shock wave decreases with a consequent diminution of the effect of bluntness. Orig. art. has: 4 figures and 6 formulas.

ASSOCIATION: None

SUBMITTED: 15Jan64

ATD PRESS: 3101

ENCL: 00

SUB CODE: ME, AS

NO REF SOV: 005

OTHER: 001

Card 2/2

KOVALEV, G.A.; D'YAKONOV, Yu.S.

X-ray study of kaolinitic clay minerals. Zap.Vses. min.ob-va 88
no.4:467-473 '59. (MIRA 12:11)

(Clay)

KOVALEV, G.A.; D'YAKONOV, Yu.S.

Structural characteristics of vermiculatelike minerals from
the Kola Peninsula. Zap. Vses. min. ob-va 89 no. 4:458-460
'60. (MIRA 13:11)

(Kola Peninsula--Vermiculite)

D'YAKONOV, Yu.S.

Application of Fourier's method of analysis to the interpretation of X-ray photographs of stratified minerals with a mixed laminated structure. Kristallografiia 6 no.4:624-625 J1-Ag '61.
(MIRA 14:8)

1. Vsesoyuznyy geologicheskii institut.
(Fourier transformations) (X-ray crystallography)

VOLOSTNYKH, J.T.; D'YAKONOV, Yu.S.

X-ray diffraction analysis of petrographic thin sections. Zap.
Vses.min.ob-va 90 no.3:310-312 '61. (MIRA 14:10)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut
(VSEGEI), Leningrad.
(X rays--Diffraction) (Petrology)

D'YAKONOV, Yu.S.

Fourier transform method for a direct interpretation of X-ray
photographs of mixed-layered minerals. Rent.min.syr. no.1:
97-107 '62. (MIRA 16:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy institut.
(X-ray crystallography)

D.YAKONOV, Yu.S.; KOVALEV, G.A.

X-ray studies of halloysite from Tertiary sediments in Bashkiria.
Zap.Vses.min.ob-ya 92 no.2:227-230 '62. (MIRA 15:6)
(Bashkiria--Halloysite)
(X rays--Industrial applications)

D.YAKONOV, Yu.S.

Alternation of layers in composite laminar structures of vermiculite -
biotite. Kristallografiia 7 no.6:878-881 N-D '62. (MIRA 16:4)

1. Vsesoyuznyy gologicheskiy institut.
(Vermiculite) (Biotite) (X-ray crystallography)

D'YAKONOV, Yu.S.

Possibility of quantitative X-ray determination of kaolinite,
hydromicas and montmorillonites. Rent.min.syr. no.3:85-106
'63. (MIRA 17:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskii institut,
Leningrad.

D'YAKONOV, Yu.S.

X-ray analysis of cerolite. Trudy VSEGEI 96:203-212 '63.

(MIRA 17:9)

D'YAKONOV, Yu.S.

Results of an X-ray diffraction study of cerolites. Dokl.AN
SSSR 148 no.4:909-911 F '63. (MIRA 16:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy geologicheskiy
institut. Predstavleno akademikom N.V.Belovym.
(X-ray diffraction examination) (Cerolite)

D^YYAKONOV, Yu.S.

Mixed-layered clay mineral cognate to stevensite. Zap. Vses.
min. ob-va 93 no.4:463-468 '64 (MIRA 18:2)

D'YAKONOVA, A., tkachikha Shuyeskoj Ob'yedinennoj fabriki; STOLEBUNOV, S.N.,
inzhener, konsul'tant; DEMICHEVA, D., redaktor; MALEK, Z., tekhnicheskij redaktor.

[School at the loom] Shkola u stanka, [Moskva] Izd-vo VTsSPS Prof-
izdat, 1953. 57 p. (MLRA 7:9)
(Weaving)

USSR Soil Science - Tillage. Amelioration. Erosion.

Abs Jour : Ref Zhur Biol., No 1, 1959, 1406

Author : D'yakonova, A.A.

Inst : Eastern Affiliate Academy of Science, USSR

Title : Change in Some Physical and Chemical Properties of Virgin Black Soils with Their Treatment.

Orig Pub : Izv. vost. fil. AN SSSR, 1957, No 3, 126-134

Abstract : Investigations were conducted in the vicinity of Barnaul on 2 fields containing an 8-field vegetable-grassland crop rotation: oats and grasses, grasses, grasses, cucumbers and tomatoes, cabbage, plants with edible roots, beans, and potatoes. Observations were conducted on common chernozems according to the rotation of the bed and in the field which was the last in the crop rotation. In the arable horizon of worked soils in

Card 1/2

- 31 -

D'YAKONOVA, A.A.

Dynamics and relations of moisture forms in ordinary Chernozem
soils under vegetable - grassland rotations. Izv.Sib.otd. AN SSSR
no.9:126-135 '58. (MIRA 11:11)
(Siberia, Western--Chernozem soils) (Soil moisture)
(Rotation of crops)

D'YAKONOVA, A. A., CAND AGR SCI, "VARIATION IN ^{the} PHYSICAL
AND CHEMICAL PROPERTIES OF ORDINARY CHERNOZEM ^{at} AT THE WEST-
ERN SIBERIA ^{of} VEGETABLE EXPERIMENTAL STATION, UNDER CONDITIONS
OF ~~THE~~ ^{field} VEGETABLE GRASS ~~LAND~~ ~~SYSTEM~~ OF CROP ROTATION."
NOVOSIBIRSK, 1960. (BASHKIR ~~IA~~ AGR INST). (KL, 3-61,
225).

D.YAKONOVA, A.A.

Salt and nutrient balances of Solonetz soils under cultivation in southern Kulunda. Trudy Biol. Inst. Sib. otd. AN SSSR no.9:107-117 '62 (MIRA 17:8)

D'YAKONOVA, A.D.

Course of ~~influenza~~ pneumonia in children. Pediatriia 37
no.7:86 J1 '59. (MIRA 12:10)

1. Iz kafedry detskikh bolezney Chelyabinskogo meditsinskogo
instituta.

(PNEUMONIA)

D.YAKONOVA, A.D.

Clinical aspect of protracted colienteritis in young children.
Vop.okh.mat.i det. 8 no.3:38-40 Mr '63.

(MIRA 16:5)

1. Iz detskoy bol'nitsy (glavnyy vrach A.I. Patova) Traktoroza-
vodskogo rayona Chelyabinska.
(ESCHERICHIA COLI) (INTESTINES—DISEASES)

L 33947-65 EWT(m)/EPF(c)/EPA(w)-2/ENP(j)/T Pc-4/Pab-10/Pr-4 RWH/WW/RM
 ACCESSION NR: AP4047219 S/0190/64/006/010/1891/1894

AUTH: Okhrimenko, I. S.; D'yakonova, E. B.

TITLE: The problem of the interaction of polymethacrylic acid with polyvinyl alcohol in concentrated aqueous solutions

SOURCE: Vy sokomolekulyarny'ye soyedineniya, v. 6, no. 10, 1964, 1891-1894

TOPIC TAGS: polymethacrylic acid, polyvinyl alcohol, gel formation, hydrogen bonding, ester formation

ABSTRACT: The authors studied the effect of concentration, the ratio of reactants, time and temperature on the interaction between polymethacrylic acid (PMAA) and polyvinyl alcohol (PVA) in aqueous solution. PMAA was prepared by polymerization of methacrylic acid in methyl alcohol solution at 65-70C in the presence of 0.5% benzoyl peroxide. The ratio of the reactants by wt. (PMAA:PVA) was varied from 10:10 to 10:90 and the temperature was varied between 0 and 150C. It was shown that at 16-18C in mixtures containing 50% PMAA and higher, a gel-like product is formed. The amount of gel increases with increasing concentration of starting compounds, increased temperature and increased reaction time. The products become soluble on lowering the temperature to 0-2C, and the sol-gel reversibility is

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L 33947-65

ACCESSION NR: AP4047219

2
dependent on the degree of hydration. It was also established that the formation of water-insoluble products of PMAA with PVA proceeds in two stages: the first involves the formation of reversible and irreversible products as a result of hydrogen bonding between functional groups, and the second involves ester bond formation. Orig. art. has: 4 tables and 1 figure.

ASSOCIATION: Leningradskiy tekhnologicheskii institut Im. Lenooveta (Leningrad technological institute)

SUBMITTED: 25Dec63

ENCL: 00

SUB CODE: 0C

NO REF SOV: 002

OTHER: 003

Cord 2/2

D'YAKONOVA, E.B.; OKHRIMENKO, I.S.; YEFREMOV, I.F.

Effect of nonelectrolytes on the association of polymethacrylic acid and polyvinyl alcohol in solutions. Vysokom. soed. 7 no.6: 1016-1019 Je '65. (MIRA 18:9)

1. Leningradskiy tekhnologicheskij institut imeni Lensoveta.

ACC NR: AP6000354

SOURCE CODE: UR/0286/65/000/021/0048/0043

AUTHORS: Okhrimenko, I. S.; D'yakonova, E. B.

ORG: none

TITLE: Method for obtaining thermosensitized carboxyl-containing latex. Class 39, No. 176068 ⁴⁴ announced by Leningrad Technological Institute Im. Lensovet (Leningradskiy tekhnologicheskii institut) ⁴⁴

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 21, 1965, 48

TOPIC TAGS: rubber, synthetic rubber, rubber chemical, latex

ABSTRACT: This Author Certificate presents a method for obtaining thermosensitized carboxyl-containing latex with the aid of thermosensitizing agents. To speed up the process of gel formation and to increase the thickness of the rubber gel layer, a mixture of aqueous solutions of polymethacrylic acid and polyvinylalcohol or its derivatives are used as thermosensitizing agents. The solutions are mixed in the ratio of 1.5:1 to 2.5:1.

SUB CODE: 11/ SUBM DATE: 11Jul64

Card 1/1 HW

UDC: 678.041.5:678.744.332+678.744.72

D'YAKONOVA, I.N.

Further improvement of cranioplasty with plexiglass. Vop. neirokhir.
18 no.4:24-26 J1-Ag '54. (MLRA 7:10)

1. Iz kliniki nervnykh bolezney i neyrokhirurgii Rostovskogo
meditsinskogo instituta.
(CRANIUM, surgery,
*plastic, with plexiglass)

D'YAKONOVA, I. N.

D'yakonova, I. N.

"The plastic surgery of skull defects with thin organic glass."
Rostov na Donu State Medical Inst. Rostov na Donu, 1956. (Diss-
ertation for the Degree of Candidate in Medical Science)

So: Knizhnaya letopis', No. 25, 1956

URMANCHIKOVA, T.G.; D'YAKONOVA, I.N.

Electrophysiological study of some subcortical formations in man with chronically implanted electrodes. Fiziol. zhur. 51 no.8-909-917 Ag '65. (MIRA 18:7)

1. Laboratoriya fiziologii vysshey nervnoy deyatel'nosti Instituta eksperimental'noy patologii i terapii AMN SSSR. Sukhumi i kliniki nervnykh bolezney i neyrokhirurgii Meditsinskogo instituta, Rostov-na-Donu.

D'YAKONOVA, I.P.

Quadratic transformations arising in double projecting of a quadric
onto a plane. Dokl. na nauch. konf. 1 no.3:50-54 '62.

(MIRA 16:8)

(Quadrics) (Cremona transformations) (Geometry, Projective)

D'YAKONOVA, I.P.; SKOPETS, Z.A.

Combined oblique and stereographic projection of a quadric onto a
plane. Dokl. na nauch. konf. 1 no.3:55-59 '62. (MIRA 16:8)
(Geometry, Projective) (Quadrics) (Cremona transformations)

D'YAKONOVA, K. V.

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STAFF I BOB KESTERMAN
2/17/2001
2/17/2001

Understand and explain. Explain the importance of the following concepts:

Articulation; dental study, pp. 17; (Illustrations) from *Journal of Dental Articles*, No. 17) *Review*, 1959, 157 p. Illustrated. 1,500 copies limited.

Ed.: V. O. Piskunov, Academician of the USSR Academy of Sciences
 Ed. of Publishing House: L. Ye. Kuznetsov

1. The first step in the process of identifying a problem is to recognize that a problem exists. This is often done by comparing current performance with a desired state or goal. If there is a discrepancy, a problem is identified.

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